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HERRETT

Energy Development Impacts on the Blanco and Rifle Districts of the White River National Forest

Prepared For

Professional Development for Outdoor Recreation Management
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and the
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by

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ABSTRACT

Many social changes are happening in northwestern Colorado due to rapid population increases resulting from oil shale and coal development. One aspect of these social changes will be the change in recreation demands placed on communities and land management agencies in and adjacent to the region. The Rifle and Blanco Ranger Districts of the White River National Forest are within this energy impacted region. What recreation changes should Forest Service land managers be planning for in the next five to twenty year period? The White River National Forest is beginning its Forest Management Plan. It is essential to the development of this plan to know the type of recreation activities the Forest Service should be providing in the energy impacted region and the amount of use that might be expected. This report is intended to help answer these questions.

The steps taken in the preparation of this report were: 1. A literature search of pertinent Environmental Impact Statements and Plans to identify what role other agencies and groups saw for the Forest Service in recreation management in northwestern Colorado; 2. Identification of what degree of development was anticipated in the region; 3. Interviews with recreation managers in Forest Service, Bureau of Land Management, National Park Service and State Parks and Recreation offices within the energy impacted area to determine what changes were happening, what changes were expected and areas that would require increased management efforts; and 4. Evaluation of reports written about recreation in other energy impacted areas in the West that might occur in northwestern Colorado.

This information was evaluated and specific areas of recreation emphasis were determined. This information will be used in the White River National Forest Management Plan, District work planning, and program planning and budgeting.

Because there are many unknowns about how many energy projects will be developed, what populations there will be, where the people will settle, and what their recreation activities will be, the conclusions identify trends and are subject to rapid change. A continued monitoring by managers will be necessary to identify areas and extent of changes as they happen.

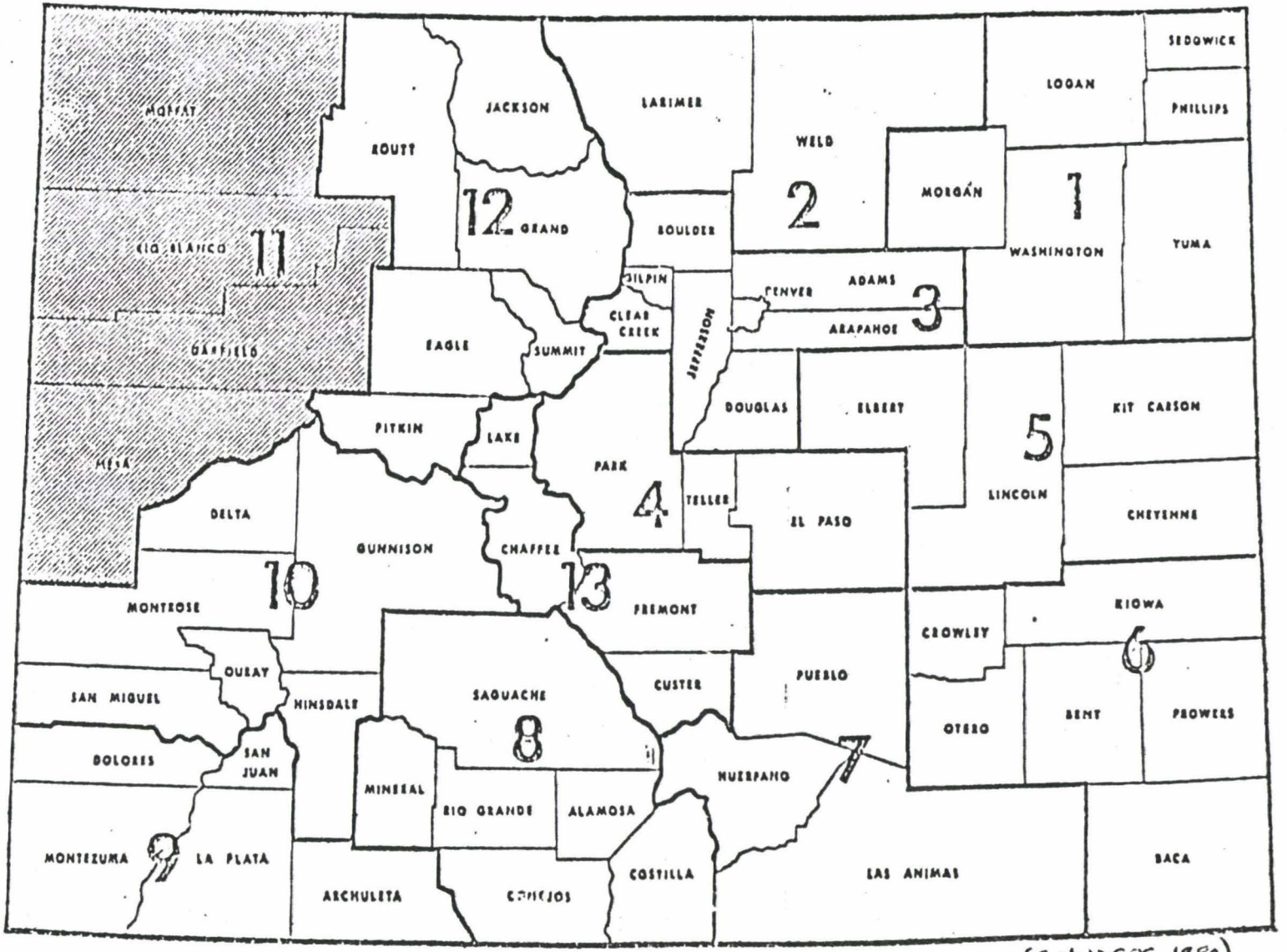
INTRODUCTION

Major changes in population are anticipated in northwestern Colorado over the next twenty years because of development of oil shale and coal resources. With the nation's emphasis on attaining energy independence, the on-again off-again oil shale industry appears to be on again for real this time. Colorado West Area Council of Governments Region XI encompasses the section of Colorado that will be directly impacted by this energy development. (See Map A) Region XI projections anticipate a likely population increase from 119,865 in 1980 to 212,542 by 1985 and then increasing to 275,547 by 2000. However, there are other end of the century projections ranging from 152,130 without energy development to approximately 1,500,000 from one report prepared by Exxon that discussed potential of the area based on the oil shale resource.

Region XI covers 9,153,920 acres or an area approximately 100 miles by 150 miles. (See Map B) Of the total acres, 3,909,364 acres are managed by the Bureau of Land Management, and 1,456,934 acres are National Forest land managed by the U.S. Forest Service, and 228,999 acres managed by the National Park Service, or 61% of the total area.

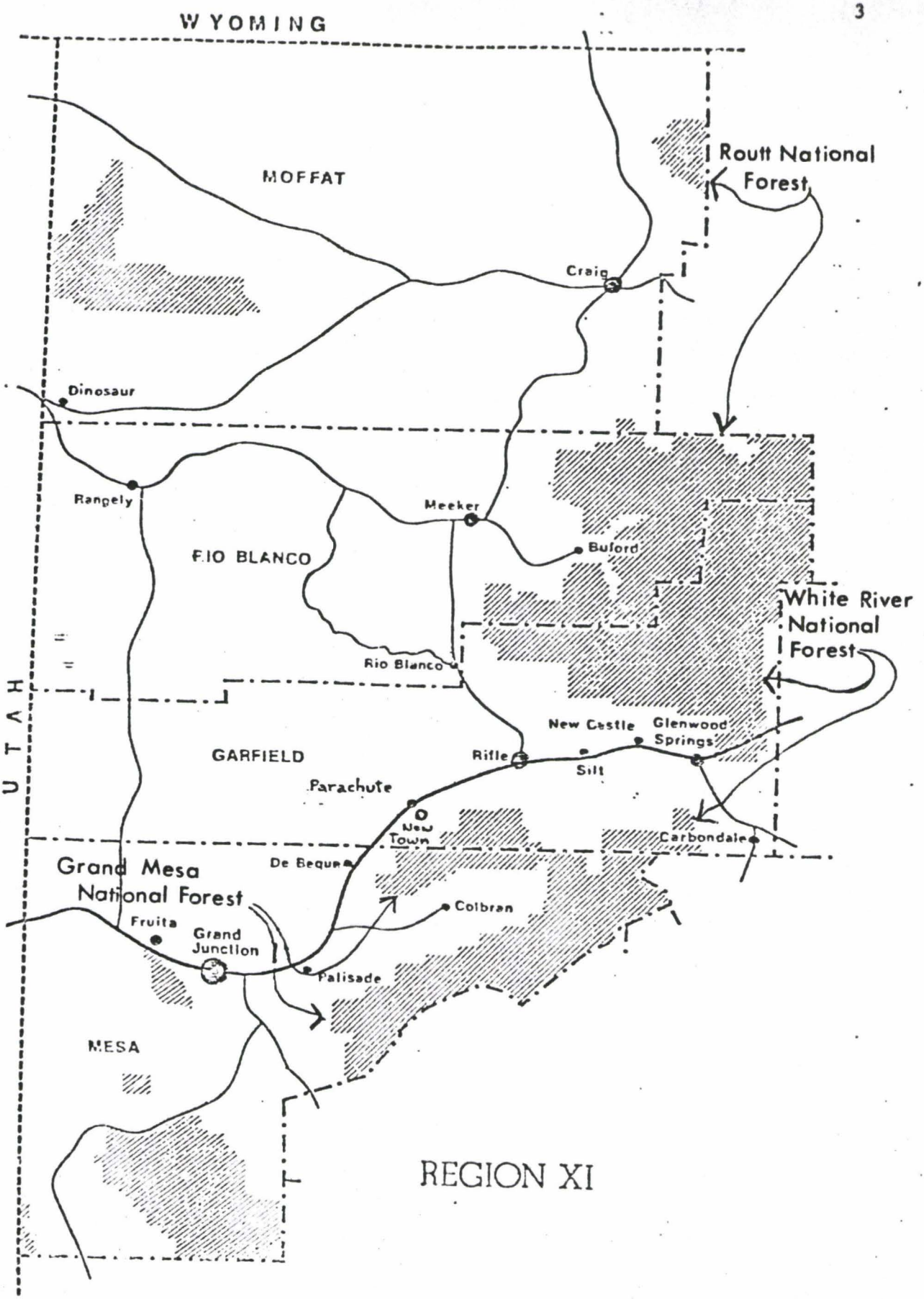
Population increases into the sparsely populated region would impact the area in a number of ways - both physically and socially. Nationally, the Forest Service has been anticipating changes in recreation use patterns because of fuel availability and cost. It has recently begun to anticipate and plan for the recreation demands placed on specific National Forests because of population increases due to energy resource development - primarily through the Regional and Forest Management Planning process. The Forest Management Plan for the White River National Forest is in its beginning stages of development.

STATE PLANNING REGIONS



(CNWACOG, 1980)

MAP A 2


WYOMING
MOFFAT
Routt National Forest
Craig
Dinosaur
Rangely
Meeker
Buford
RIO BLANCO
White River National Forest
Rio Blanco
UTAH
New Castle
Glenwood Springs
GARFIELD
Rifle
Silt
Parachute
New Town
Carbondale
De Beque
Grand Mesa National Forest
Colbran
Fruita
Grand Junction
Palisade
MESA
REGION XI

The purposes of this paper is to 1) determine what responsibilities in recreation have been identified or suggested for the U.S. Forest Service in northwestern Colorado, in various plans and Environmental Impact Statements, and 2) determine what changes in recreation use resulting from energy development population increases the U.S. Forest Service in northwestern Colorado should be anticipating for lands it manages.

This information is to be used in the development of the White River National Forest Management Plan and will have bearing on parts of the Routt and Grand Mesa National Forests plans.

Literature Review

Many groups, agencies, and companies are busy analyzing or have analyzed potential impacts on the physical environment from the on site energy development. These are documented in several reports and environmental impact statements but have little bearing on the purpose of this report. Other groups are trying to assess the probable social impacts to the existing communities in the area. Very little specific information has been written about the potential social impacts to federal land from increased population due to energy development.

The final Environmental Statement for the prototype oil shale leasing program written by the Bureau of Land Management in 1975, discusses the recreation resources of public lands in the vicinity of potential oil shale projects (northwest Colorado, northeast Utah and southwest Wyoming). (See Map C) "The public lands provide high quality outdoor recreation activities. Some of the opportunities that are available on these lands are the following types:

a) Water oriented activities associated with lakes and streams of the high country and along the major streams of the lowlands

of the Duchesne, Green and White Rivers and especially the Flaming Gorge National Recreation Area.

b) Wildlife opportunities, especailly those associated with wildlife refuges, hunting mule deer, elk, moose, and bighorn sheep at the higher elevations on National Forest and Bureau of Land Management lands;

c) Sightseeing....

d) Hiking and rockhounding..... "(Bureau of Land Management final EIS, Oil Shale, 1975)."

This document describes in general terms some activities and some of the recreation attractions in the vicinity. It goes on to describe a potential problem and change that might be expected. "One common characteristic of all the recreation areas on the public lands of the oil shale region is that they have few developed urban-type facilities that may be expected by incoming populations. The region as a whole, however, does have many untapped recreation opportunities, such as those described above, within, as well as outside, the primary oil shale lands of Colorado, Utah, and Wyoming. "(Bureau of Land Management, 1975)." Identified here is a limited number of developed sites in the public sector. Also identified, is the fact that the work force will be from outside the oil shale area with perhaps different recreation demands or anticipated experiences than are currently available within the region.

This report also notes differences in appeal by areas within the region for recreation use. "The Piceance Creek Basin is sparsely populated

but is generally accessible to motor vehicles. The area is visited sparingly by tourists at times other than during the big game hunting season. This is probably because of the proximity of the area to more desirable country with high recreation values." (Bureau of Land Management, 1975). The report does not describe why other areas are more desirable. By applying the basic design principles of Visual Resource Management (Agriculture Handbook Number 462) it is probable that the lack of visual variety in Piceance Basin and much of the Bureau of Land Management lands as compared with the abundance of variety in some of the higher elevation lands (usually National Forest) gives greater visual appeal to the latter. There are fewer water features in the lower elevation lands than the upper elevations, and water plays a major role as a recreation attractor in this dry region.

Finally, this Oil Shale EIS talks about changes in recreation patterns and esthetics. "Oil shale development will result in localized, as well as basin and regional changes in recreation and esthetic resources. However, the development will exert a considerable impact on the existing recreation environment beyond th boundaries of the development itself.

Recreation activities would shift from the more extensive types, e.g. hunting, etc., toward more intensive, urban oriented recreation facilities, e.g., golf courses, reservoirs, playgrounds, swimming pools, etc. Change in the semi-primitive nature of the region due to industrialization would adversely affect its present character and reduce its long term productivity as a primitive outdoor recreation region. Opportunities for more flexible recreation patterns would be realized and would be suitable to a larger resident population, although more restricted for the non-resident population." (Bureau of Land Management, 1975)

The conclusions of the EIS project major changes in recreation demands to be placed on the region. The methodology for arriving at these conclusions is not clear, but was probably determined primarily through professional judgement.

Another more recent Environmental Impact Statement that evaluates additional coal development in northwestern Colorado and southwestern Wyoming is the Green River - Hams Fork Draft EIS Coal, USDI, Bureau of Land Management, April, 1980. The purpose of the document is to evaluate the potential impacts of different levels of additional coal leases in the region. The evaluation of recreation draws some conclusions on needs. Following are three quotes from the above document.

1. Winter sports - "With the exception of downhill skiing, there is a surplus of public land, primarily Bureau of Land Mangement, available for these activities."

2. Developed recreation - "Historically, holiday weekends and short season activites prompt overcrowding; this situation is expected to continue. As public agencies become aware of constant overcrowding of their facilities, additional accomodations should be provided."

3. Dispersed recreation - "Increased funding would be provided to County, State, and Federal agencies within the study region to intensify managment of public lands, provide additional facilities and management personnel for the welfare and safety of the public." (Bureau of Land Management, 1980)

Forest Service personnel on the Black Hills National Forest submitted two other documents they had available for analysis of the energy related developments that are impacting the Black Hills. (Coal and uranium). They are: Energy Impacts and the Effects of Severance Tax on Western South Dakota Counties by Sixth District Council of Governments and Selected Demographic Characteristics of the Black Hills Region by Keith Jewitt. Both identify needs for additional recreation, and overcrowding of existing facilities. They identify potential conflicts between the local residents and the newcomers and differences in opinion from support for resource development on public land to those who are against resource development and use of public land. One of the reports stresses the need to develop recreation facilities to alleviate other social problems such as law enforcement.

The study that provided the most specific recreation information for an energy impacted area was A Study of Recreation Use on Bureau of Land Management Lands in Southwestern and Southcentral Wyoming Coal Regions prepared by Donald S. Warder, Department of Recreation and Park Administration, University of Wyoming, December 1979.

The purpose of the report was to answer four questions: 1. "How many people are using the designated Bureau of Land Management lands for recreation?" 2. "Where is the use occurring?" 3. "In what activities are the users participating?" 4. "What are the projected long-range recreation trends for these two regions?" (Warder, 1979) In this report, data were collected using an ethnographic interview and recording responses immediately after the interview on a survey form to facilitate analyzing results. Trends were identified and limited projections were made.

The State of Colorado is currently rewriting its comprehensive outdoor recreation plan (SCORP). The information presented by the draft SCORP shows Region XI has the largest acreage available for recreation of the thirteen statewide planning regions, is eleventh for available water acreage, and is sixth for total recreation activity days. The growth rate for the region from 1975 to 1980 was second highest in the state at 20.4%. Its population density was sixth highest in the state with 7.9 people per square mile. The highest ranking recreation activities statewide were bicycling, swimming, picnicking, and hiking. Statewide, the activities identified as having a high ranking need were picnicking, swimming, bicycling, four-wheeling, camping (developed), camping (back-country), fishing, and nature study. The activities identified as high ranking Region XI need activities were picnicking, swimming, bicycling, four-wheeling, camping (back-country), fishing, and nature study. The Forest Service is encouraged to play a major regional role in providing picnicking, four-wheeling, camping (back-country), fishing, and nature study. Bureau of Land Management is encouraged to provide all of the same activities but fishing.

Rio Blanco County, the Town of Meeker, and the local school board, named a Recreaion Commission one and one-half years ago to develop a comprehensive recreation plan and to look into the need for a recreation district in the eastern portion of the county. This group, with help from Colorado State University and the energy industry, developed a recreation survey that was sent to the residents of eastern Rio Blanco County. On this survey, people indicated what activities they are participating in and what activities they would participate in if they

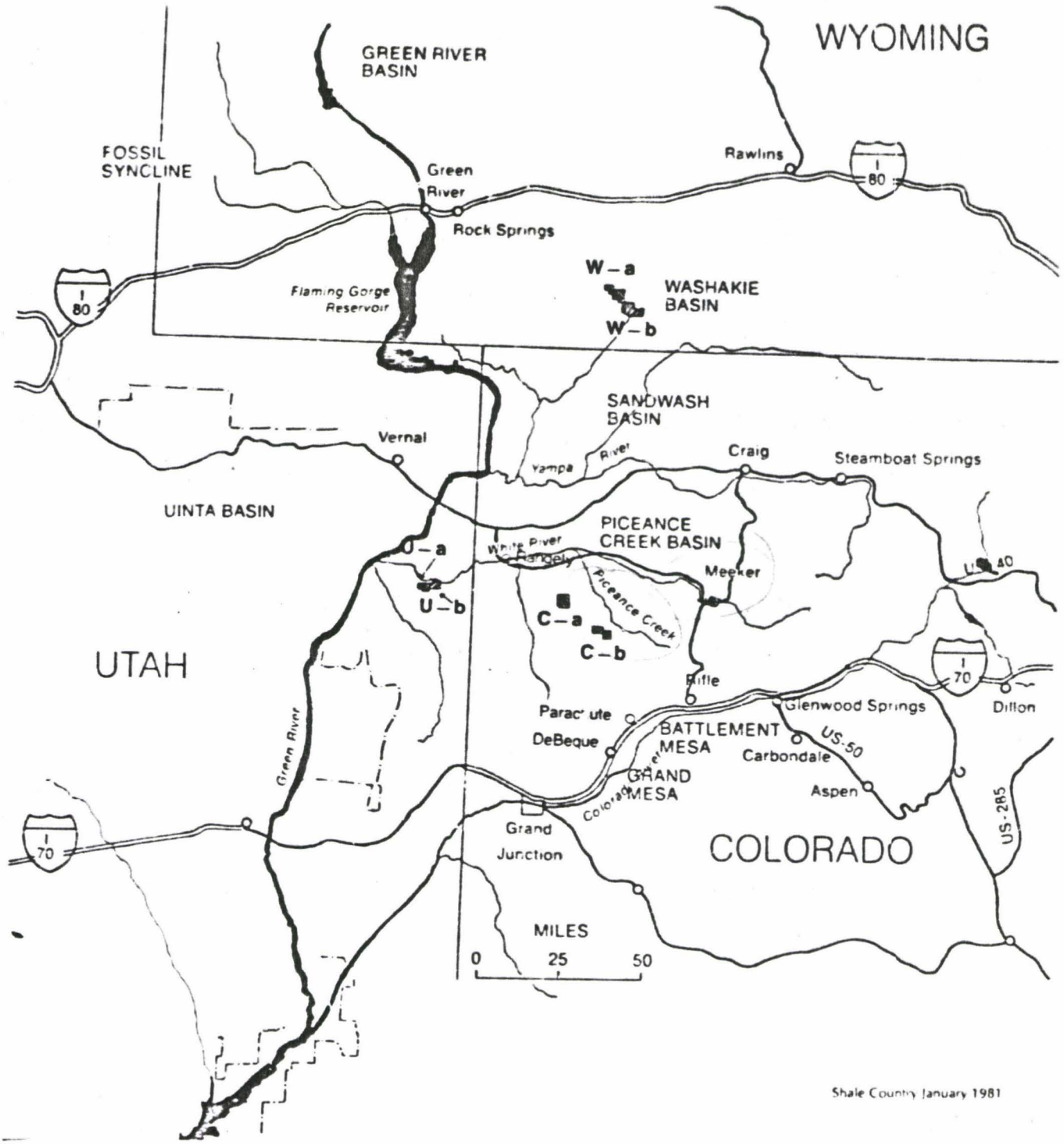
were available. The information was used to develop the recreation plan which is not published at this time. The commission evaluated each activity as to current use desired use, and shortfall. It then determined who should or could be providing the activity - community, commercial, or other public agency, including Forest Service and Bureau of Land Management. The activites identified as Forest Service and Bureau of Land Management responsibility were boating, motorcycle trails, four-wheel driving, snow-mobile trails, skiing, and warm water fishing.

Highest ranked current activities in the community are cold water fishing, hunting and picnicking. Highest ranked demands were for a movie theater and indoor swimming.

The greatest weakness of this survey is it analyzes only current residents. New residents may or may not want to participate in these activities. It also did not address what activities or facilities people would be willing to pay for.

Pace Quality Development Associates, Inc. publishes quarterly, Cathedral Bluffs Shale Oil Project Socioeconomic Monitering Report. Cathedral Bluffs Shale Oil Company holds the lease for C-b Tract in the Piceance Basin, northwest of Rifle. (See Map C) This report, among other things, identifies where their work force lives and what recreation activities they prefer. Their four highest ranked recreation activities are fishing, hunting, skiing, and camping. These have remained the most preferred activities for the past year. On October 1, 1980, there were 494 persons employed at the Cathedral Bluffs site. The total work force has increased by 189 employees since the beginning of 1980.

OIL SHALE AND COAL REGION MAP



Shale County January 1981

Many of the workers at C-b are construction workers. This is true for the C-a Tract as well. Identification of preferred recreation activities for the construction workers will be useful for identifying activity demand trends over the next five to ten year period since construction phase will continue during that period.

METHODOLOGY

Step 1

To meet the first objective of determining what responsibilities have already been identified for the Forest Service in meeting recreation needs in the oil shale and coal region in northwestern Colorado, a search of existing plans and environmental statements had to be undertaken. This information was reported in the Literature Search Section. The documents that identify Forest Service responsibilities or roles in providing recreation are:

1. Final Environmental Statement for the Prototype Oil Shale Leasing Program, USDI Bureau of Land Management, 1975;

2. Green River - Hams Fork Draft EIS, Coal, USDI Bureau of Land Management, 1980;

3. Colorado State Comprehensive Outdoor Recreation Plan (Rough Draft) 1980;

4. Eastern Rio Blanco Recreation Commission Recreation Master Plan (Rough Draft, 1981).

There may be other county recreation plans that recommend Forest Service responsibilities or roles in recreation. The above are the most recent or most pertinent to energy development impacts locally.

Step 2

The second step was to identify what energy development is going to happen and where. This was an imprecise step since there are many unknowns. Is oil shale development actually going to happen this time? What level of development is going to take place? How much additional coal development is planned? What water developments are planned, if any? There is much talk, speculation, etc., about the above questions. Industry has not made known all of their plans because they do not have all of the information they need to make the decisions. Part of the indecision is economic in nature. What role is the federal government going to play in encouraging synfuels development? What does the change in administration mean to this program? Industry has talked about possible developments. Some companies have made commitments of at least limited development. The costs in this program are staggering and the methods for utilizing the shale are not even proven to be commercial yet, as far as some people in the industry are concerned.

It was decided to use the Colorado West Council of Governments population scenarios as a basis for what can be anticipated. This is the primary agency in the State and county that monitors on a regional basis, the plans of the specific energy companies and most likely levels of development. The Council of Government has developed three scenarios for northwestern Colorado:

> "Scenario I - Normal population growth without energy development or other major short term growth factors.

Scenario II - Energy development projected with coal and oil shale development as is currently planned.

Scenario III - Energy development projected with energy development at a high level of production of shale oil, 450,000 barrels a day by 1990 and 640,000 barrels a day by the year 2000; and a coal production level of 26 million tons per year by 1985 and 34 million tons per year by the year 2000."

Scenario III was based on former President Carter's proposed synthetic fuel development. Scenario II has been selected by the Colorado West Area Council of Governments Board as the Regions officially endorsed population projections. (Colorado West Area Council of Governments, September 1980.)

Table 1 shows the September, 1980 population projections.

TABLE 1

Population Projections

End of Year	Scenario I		II		III	
All of Region XI						
1980	108,573		121,935	74% increase	(121,935)	
1985	119,494		212,542		245,675	101% increase
2000	152,130	126% increase	275,547		360,564	196% increase
Garfield County						
1980	19,985		23,013			
1985	23,178		55,694		66,126	
2000	33,911		75,566		97,873	
Rifle (located in Garfield Co.)						
1980	2,316		3,933			
1985	2,448		19,573		22,060	
2000	2,870		23,687		25,159	
Battlement Mesa (New Community in Garfield Co.)						
1980	0		589			
1985	0		9,555			
2000	0		3,979			
Mesa County						
1980	70,687		79,540			
1985	77,221		118,745		120,156	
2000	95,128		145,198		190,484	

Greater Grand Junction (Mesa Co.)

	I	II	III
1980	56,829	63,826	
1985	62,193	94,817	
2000	76,506	116,216	

Moffat County

1980	12,577	13,271	
1985	13,385	18,711	
2000	16,413	28,299	

Craig (Moffat County)

1980	9,041	9,735	
1985	9,758	13,446	
2000	11,512	21,216	

Rio Blanco Co.

1980	5,324	6,111	
1985	5,710	19,392	40,501
2000	6,678	26,484	44,302

Meeker

1980	1,886	2,615		
1985	1,958	10,693	(309%)	16,745
2000	2,220 (458%)	14,548		16,593

The energy company work force projections which were used in the preparation of Scenario II population projections are listed in Appendix A.

It was decided to limit the study area to the area of Region XI since the majority of the energy development will occur in this Region and because the western part of the White River National Forest is in this Region. Four other National Forests are located within this region, the Routt National Forest near Craig, Colorado, the Grand Mesa National Forest near Grand Junction, Colorado, the Uncompahgre National Forest south of Grand Junction, and a very small portion of the Manti-LaSal National Forest in southwestern Mesa County.

The oil shale development is concentrated in an area north of Interstate 70, south of State Highway 64 between Meeker and Rangely and west of State Highway 13 and 789 between Meeker and Rifle. The coal development is concentrated west of Steamboat Springs, north of State Highway 64 between Meeker and Rangely and is centered around Craig.

Coal development is also happening in southcentral and southwestern Wyoming with potential for oil shale development in that region also. Oil shale development is proposed south of Vernal, Utah just across the Colorado-Utah state line. Some of the people involved in those developments will move between these areas, but the great majority of the impacts on the White River National Forest are anticipated from within Region XI.

Step 3

The third step was to determine 1) what public facilities are in this region, 2) what capacity exists in developed sites, 3) what is being

observed by recreation manager, and 4) what changes are anticipated by these managers. It was decided to consider recreation impacts and ability to absorb or accomodate recreation activities primarily on the following Ranger districts within Region XI. (See Map C).

- Grand Junction District, Grand Mesa National Forest, Grand Junction, Colorado.
- Colbran District, Grand Mesa National Forest, Colbran, Colorado.
- Rifle District, White River National Forest, Rifle, Colorado.
- Blanco District, White River National Forest, Meeker, Colorado.
- Bears Ears District, Routt National Forest, Craig, Colorado.

There are two National Monuments within this region that provide recreation facilities, Dinosaur National Monument is located west of Craig, 90 miles, and north of Rangely, 20 miles, just north of US 40. Colorado National Monument is located just west of Grand Junction.

The Bureau of Land Management manages land throughout the entire region with two developed campgrounds near Grand Junction.

Colorado State Parks manage four developed sites within the region. Facilities and recreation use are shown in Table 2.

Table 2

Recreation Statistics

	Recreation Use			Roads		
	Developed Site PAOT	Developed '80 Use	Dispersed '80 Use	Suitable For 2 Wheel	Suitable For 4 Wheel	Miles of Trail
Gran. Junction District Grand Mesa N.F. *	Picnic 365 Camping 1765	Picnic 20,000 Camping 107,500	203,600	183 miles	135 miles	314 miles
Colbran District Grand Mesa N.F.	Grand Junction Dist. manages dev. sites		165,000	83 miles	83 miles	102 miles
Rifle District White River N.F.	Camping 347	75,000	200,000 Wilderness 13,000	89 miles	268 miles	192 miles
Blanco District White River N.F.	Camping 785	Picnic 900 Camping 69,300	100,000 Wilderness 68,000	50 miles	206 miles	252 miles
Bears Ears District Routt N.F. **	Camping 90	9,370	89,550	35 miles	100 miles	83 miles
Dinosaur National Monument	River Camp Campground 570	25,775 38,535	223,800			
Colorado National Monument	Picnic 375 Camping 400	17,500	250,000			
Grand Junction B.L.M.	430	No Use Records	No Use Records 61,000 est.			
Craig B.L.M.	0	0	No Use Rec.		No closures to	ORV
Colorado State Parks	1185	561,091 rec. visits				
* Grand Junction Dist.	Lodge 265 Organ. Camp 150	Lodge 64,800 21,100				
**Bears Ears Dist.	250	3,920				

Results of the interviews were not surprising. There was a strong similarity of responses from managers. All districts reported an increase of camping use at developed sites, and more people driving around the districts primarily in pick-ups or four-wheel drive vehicles. They are also seeing an increase in numbers of families cutting Christmas trees and many more people cutting firewood. Most districts indicated this increase is attributable to both the increase in number of wood burning stoves in homes today and the fact that there are more people in their communities. Some activities that appear to be popular with newcomers are camping, fishing, hunting, and four-wheeling. Hiking or Wilderness use from the newcomers is generally associated with hunting season, on those districts that have classified Wilderness.

Each agency reports an increase in compaints from local landowners about trespass across private land; people do not seem to recognize a difference in ownership between public and private land or they do not care. Previously, these complaints were primarily during hunting season. They are becoming summer long now. Coupled with this, is an increase in complaints about limited access to National Forest and Bureau of Land Management lands. Each agency also has seen an increase in law enforcement problems varying from violation of off-road vehicles closure regulations to people living on public land since they cannot find or cannot afford housing in town.

Colorado National Monument is having problems from occupancy trespass and dogs where new subdivisions are adjacent to National Monument land. Most agencies are having problems with gates being left open on allotments - this is now throughout the summer, rather than just during hunting season.

All units indicated increased requests for information, confusion about differences between Bureau of Land Management and Forest Service regulations and ownership and lack of knowledge about impacts of their equipment on the arid land. (Many newcomers are from the east or southeast where nature heals itself more quickly than the dry landscapes in northwestern Colorado).

There is beginning to be some antagonism between old timers and newcomers because there is no longer room on weekends in their favorite campground.

Forest Service and Bureau of Land Management managers indicated there is little room in developed sites to accomodate additional people, particularly on weekends during the summer. They also noted that a different type of campground from the traditional single spur design, might work to alleviate some crowding. The people want a place to park their campers and do not particularly need a table and fire ring, although others still want the more traditional campground development. Closeness to other campers does not seem to be a deterrent to the camping experience for some. Some want a base for their equipment and then go driving, fishing, or motorbiking.

Water appears to be a very critical element in campers selection of a site other than during hunting season. Water is not abundant in northwestern Colorado, so there is potential for overcrowding where access to lakes or streams is available. Lack of access to water due to private land ownership patterns is significant.

Managers generally expect overcrowding in developed sites to continue, requiring more administration and law enforcement time. Access problems across private land are expected to become serious. Safety on existing roads is expected to become a serious problem because of numbers on the roads beyond their design capacity. An increase in law enforcement problems, trespass, and confusion about what is legal is expected. Four-wheel drive use is expected to increase along with motorcycle use.

Step 4

The fourth step in preparation of this project was to locate studies that have been completed about recreation impacts to public land due to energy development. Two areas that have experienced rapid growth during the past decade because of coal and mineral development are Gillette, Wyoming and Rock Springs and Rawlins, Wyoming.

The Black Hills National Forest is receiving impacts from Gillette, Wyoming. The two reports written to evaluate the sociological patterns and changes in that area were identified in the literature search section. They emphasize the need for recreation facilities or opportunities to alleviate other social problems in communities. (Such as law enforcement and alcohol problems) These two reports are very general in nature. Recreation need was only one topic covered in an array of changes happening within the area.

The University of Wyoming study for the Bureau of Land Management in southcentral and southwestern Wyoming was much more intensive and dealt with recreation exclusively.

The following findings from that study are from analysis of interviews with recreationists throughout Bureau of Land Management areas in southwestern and southcentral Wyoming. This area is similar to northwestern Colorado in many ways. The energy impacted communities were small with few public recreation facilities prior to energy development. The land is semi-arid with little water. Bureau of Land Management is the manager for the lower elevation lands while the Forest Service manages the higher elevation lands. These findings could be expected to be applicable to northwestern Colorado.

1. The average group size was approximately three. Forty-four percent of the respondents were groups of two, while fifteen percent of the groups had four people.

2. Forty-four percent of the groups were family, twenty-seven percent were friends and thirteen percent were family and friends.

3. Approximately one-third of the users were observed using four-wheel drive vehicles as their primary method of transportation. Most interviews were around developed sites, so figures may not show true picture of four-wheel vehicle activity. Another forty-three percent of the primary vehicles were two-wheel drive pick-ups, some with campers and pick-up shells.

4. Approximately one-third of the users in the area were from outside the state of Wyoming. The heaviest recreational use came from individuals residing closest to the resources. The largest number of users originated from the larger communities in the state, not all of them energy impacted.

5. Thirty-three percent of the users traveled less than 25 miles to a recreation site. The next largest percentage group traveled less than 100 miles. A total cumulative percentage of the population traveling less than 100 miles is more than two-thirds of the users.

6. One-third of the users considered themselves local users, while two-thirds considered themselves non-local users.

7. The most commonly used secondary vehicle was the camping trailer. Almost half of the user groups were using some type of recreation trailer. The second most frequently occuring type of secondary vehicle was a raft or boat (approximately 33%). Ten percent of the secondary vehicles used at the site were four-wheel drive, while motor bikes comprised two percent of the secondary vehicles.

8. Thirty-four percent of those interviewed classified themselves as hourly laborers, typical for energy related occupations. In a further grouping of occupations, fifty-eight percent were classified as blue-collar. Twenty-seven percent were white-collar workers. There was a wide dispersal of use among all individuals in the various occupational classifications.

9. The mean age of respondents interviewed was 40 years. Sixty-six percent of the people interviewed were between the ages of 28 years and 52 years. The mean age of male

participants was 30 years. Sixty-six percent of the males fell between 25 years and 36 years. Ninety percent of the population were between the ages of 19 and 42. The average male participants are relatively young. The mean age for women was just over 25 years. Sixty-six percent of the female participants were between the ages of 17 and 34 years. Ninety percent were between nine and 42. Ages ranged from one year old to 7? for men and from nine years to 71 for women.

Findings varied somewhat between planning units as far as primary recreation activities. Eighty-nine percent of recreation use in one unit was either hunting or fishing. In another unit, fifty percent of the total recreation use was hunting. In a third unit, eighty-three percent of the participants were involved in fishing activities. The most common secondary activity within the Overland Planning Unit was "camping" followed by "relaxing". "Socializing" was shown as a secondary activity by eleven percent of the participants.

Seasonal variations were analyzed. "Family groups" predominated during all seasons but winter where "friendship groups" predominated. Spring had the lowest "individual" use while it had the highest "family" and "friend" use. Summer had the lowest four-wheel drive (as a primary vehicle) use of all the seasons.

Winter use was minimal from the closest towns (energy impacted). Primary winter use was from Cheyenne and Laramie (not energy impact communities). Distance traveled by users decreased dramatically during the winter. Use beyond 200 miles did not exist in the winter. The greatest season of use by locals was during the spring.

Warder's report used a modified delphi-ethnographic method to try to predict possible future use. There were significant differences between the interviews conducted within the communities and the on-site interviews. The in-town interviews estimated the participation rate of recreation sites was eighty-two percent local user to eighteen percent non-local user. The on-site interviews showed thirty-nine percent were local users compared with sixty-one percent non-local users. Comparing in-town estimates of distance users traveled to the sites again showed significant discrepancy. (See Table 3)

Table 3

Warder, 1979

On-Site vs. In-Town Comparison of Distance Traveled

	On-Site		In-Town	
Distance	N	%	N	%
25	128	35%	86	41%
25-50	14	4	88	42
51-100	107	29	17	8
101-200	67	18	17	8
201-300	12	3	0	0
301-500	8	2	1	1
500	33	9	0	0

Significance = $p < .00001$

Cramer's V = .55292 (a large value of V merely signifies that a high degree of association exists)

"The only conclusion available is that it is impossible to accurately predict recreational behavior by measuring recreational intentions. Community leaders are not valid predictors of on-site recreation use... The best available estimate of the recreational use of Bureau of Land Management resource lands to the year 1990 must be accomplished be a trend analysis using the present level of use as a base." (Warder, 1979)

Warder goes on to say - "Within the southcentral Coal Region, the estimated population from its present level to that of the 1990 population figure was almost thirty-seven percent. One might increase the computed present use levels (as suggested above) and increase them by thirty-seven percent. The estimated use increase will, at least, be proportional to the estimated population increase. Present trends in outdoor recreation participation rates nationwide suggest the conservative nature of this estimate. Outdoor recreation use for some activities is growing faster than the population is increasing." (Warder, 1979)

The Wyoming Game and Fish Department shows net increase of seven to nine percent, compounded yearly, in the sale of fishing licenses. "Beyond the proportional population increase by which use estimates are to be based, it it necessary to recognize that some activities will grow faster than simply keeping pace with population increases.

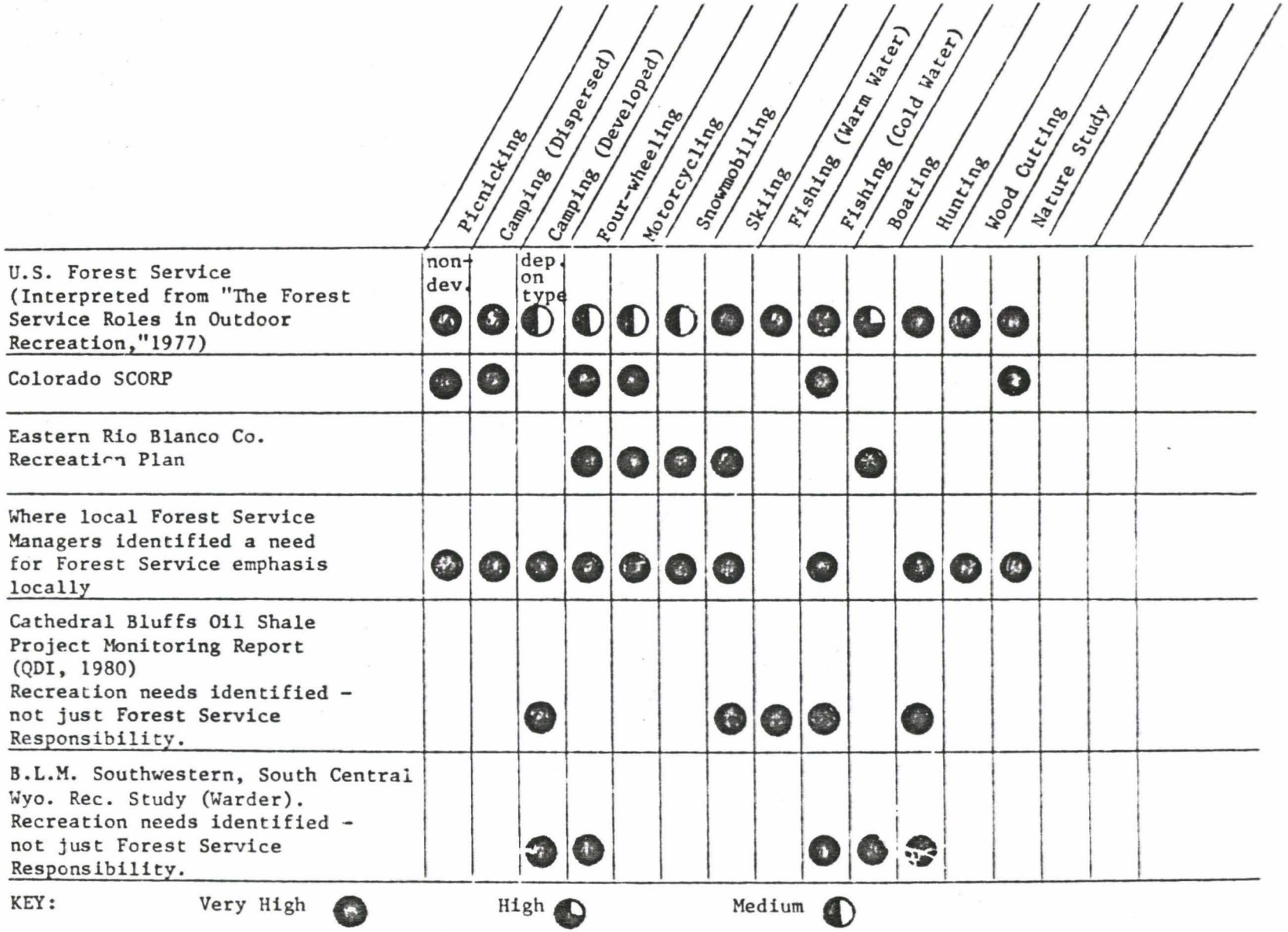
Again, the estimate must be considered conservative. We assume a minimal sixty-six percent increase in outdoor recreation participation. It is possible this estimate may be considerably under the use figures to be observed in 1990 as a arsult of the entire energy situation. If present trends continue, more people are likely to redirect their outdoor recreation pursuits to areas closer to home. Those people presently living within the Coal Region but leaving it for their recreation, will

probably decrease the distance they travel. As a result, there are potential 1990 users not presently involved in any stage of the trend analysis and they will inflate participation enen more in the end." (Warder, 1979)

Discussion

What does all this information mean to northwestern Colorado and the White River National Forest in particular? Evaluation of the information indentifies areas of consistancy about what changes are taking place or probably will take place. Some discrepancies are also identified. Table 4 shows a comparison of the various reports evaluated -- what role is suggested for the Forest Service by other agencies or groups and Forest Service national recreation policy.

Table 4 ACTIVITIES IDENTIFIED AS FOREST SERVICE RESPONSIBILITY BY AGENCIES LISTED ON LEFT



Forest Service national recreation policy emphasizes providing increased dispersed recreation as a primary recreation role for the agency while continuing to provide developed opportunities at the historic growth rate. This de-emphasizes development of new campground facilities. Land managers working on the ground with the public as well as questionaires for the C-b Tract work force and the Warder Study on Bureau of Land Management land in southcentral Wyoming indicate a need and desire for expanded developed camping.

The camping sites should be water oriented or located centrally to serve a variety of activities.

There is potential for reservoir construction for energy development. These could provide an opportunity for water oriented campgrounds to be constructed. Reservoirs may not provide all the answers for additional campground needs, however. There is a great deal of discussion about possible reservoir locations. Various sites have been discussed. Many of the sites are at the higher elevations where terrain suitable for campground development is very limited. The flatter terrain adjacent to streams and rivers would be flooded and, in some cases, existing campground facilities might be flooded. Care should be taken as specific reservoir proposals are received that developed campground capacity is evaluated. This evaluation should be a responsibility of both the U.S. Forest Service and the Bureau of Land Management.

Reservoirs would offer increased opportunity for lake fishing. Stream and river fishing would be diminished by some proposals. Access to long stretches of the White River and the Colorado River are limited

because of private land adjacent to the rivers and no public access. Remedying this situation appears to be best approached by county or State government in light of the de-emphasis of the purchasing program in the federal government. Counties can possibly encourage the energy companies to help finance land purchase or right-of-way of river frontage. This should not be looked at as the only answer since energy developers are already being bombarded with requests for financial assistance for many programs within the counties.

Four-wheeling appears to be a desire of many of the newcomers. Looking around in energy impacted communities in Colorado and Wyoming, it appears that a prerequisite for living there must be ownership of a pick-up or four-wheel drive vehicle with a gun rack. Warder's study indicated a fairly high number of four-wheel vehicles -- mostly in conjunction with a camping experience. It is interesting that four-wheel use was not identified by the C-b Tract workers as a primary recreation activity. A manager at C-b stated that on Fridays, workers drive their own vehicles rather than ride the Company provided buses so they can go camping and fishing. Observation on Friday evenings show a high number of four-wheel drive vehicles leaving C-b. It is either a status symbol to own one and they are not being used for four-wheeling or they are being used in conjunction with other activities such as camping. The second possibility is the more likely. Looking at the miles of roads that are accessible only to pick-up or four-wheel drive on the Blanco, Rifle, and Bears Ears Districts (see Table 2, Page 19) it appears that four-wheeling is part of an overall recreation experience as Dr. Warder noted in his study.

Picnicking appears to be occuring in undeveloped sites in conjunction with wood cutting and driving for pleasure (often four-wheel). This will continue to be the primary means of providing picnicking. Group picnic needs may increase but currently there is little indication of this.

Trail bike use appears to be closer to towns such as Grand Junction or Meeker. Warder's study did not show trail bike use to be high in his study (two percent of secondary vehicles on sites). Providing motor bike trails was indicated by the Eastern Rio Blanco County Recreation Plan to be a Forest Service and/or Bureau of Land Management responsibility. These agencies should work together in identifying opportunities for this type of activity.

Winter sports needs were identified as a public land management agency responsibility. The Draft SCORP did not identify these activities as high needs in this region, however, the C-b Tract workers indentified skiing as one of their top four recreation activities. That study did not show whether they meant downhill or cross country skiing. The Eastern Rio Blanco study showed skiing as a need to be provided by public land agencies -- also unclear as the whether or not they meant downhill or cross country.

Within Region XI, there are two existing ski areas -- Sunlight near Glenwood Springs and Powderhorn on Grand Mesa. A proposal for the Rifle Ski Area is being evaluated by the White River National Forest in the near future. This Region is also within a one and one-half to four hour drive to Steamboat, Aspen, Vail, and Beaver Creek ski areas. The ability of the ski areas to absorb the additional use from northwestern Colorado will be addressed in studies other than this one.

Cross country trails should be considered by the Forest Service including opportunities to provide trail grooming, trailhead facilities and signing of specific trails.

The Forest Service, Bureau of Land Management, State and Counties should be working together for snowmobile trails, parking, plowing, signs, etc. Some snowmobile registration fees are available for this sort of program. Currently the activities on the Rifle and Blanco Districts are low key -- users are there but the Forest Service is not marking or grooming trails. The Buford-Newcastle Road is the only specific location that a snowmobile group has identified as important to them.

Both cross country and snowmobile use could grow rapidly. Winter is very long in northwestern Colorado (November - April usual snow cover, November - June in the high country) where snow is a major consideration in recreation plans. As newcomers arrive in the area and are not used to such long snowy winters, or at least have had indoor recreation facilities provided in their communities before, depression and dissatisfaction are common. People new to outdoor sports often feel more comfortable with some structure such as a marked trail versus an unmarked trail. The Forest Service should be looking to provide that structure to help the newcomers in a transition to new experiences where less structure is provided.

The above items discuss the opportunities for Forest Service land managers in answering the first question in purpose for the paper -- determine what responsibilities in recreation have been identified or suggested for the U.S. Forest Service in northwestern Colorado in various plans and environmental impact statements.

The second objective of the paper was to determine what changes in recreation use resulting from energy development population increases the U.S. Forest Service in northwestern Colorado should be anticipating. The above discussion does that to a degree. A projection of increase in use might help show magnitude of change and that should be addressed in the White River Forest Management Plan and District budget planning. The method used to do this was similar to Warder's in his Bureau of Land Management study -- using population trend increase and applying a similar factor to the existing use figures. He then applied an additional factor for recreation use increases in general.

Not all use on the Rifle and Blanco Districts is from northwestern Colorado. Applying northwestern Colorado growth rates to the entire existing use would be misleading. It was decided to use information from the Rec Zip Program from Trappers Lake Campground. Twenty-nine percent of the use at Trappers Lake Campground was from within the energy impact area. Fifty percent of the use was from a distance that would most likely be the Denver area. By applying growth rates for these two areas plus a growth factor for recreation use to the percentage of use from these areas, a figure for projected use might be determined. The twenty-one percent of use from outside the Denver area and northwestern Colorado had the growth factor for recreation use applied. The above numbers were added to give totals for Scenario II, Scenario III and use without energy development.

Table 5

RECREATION USE PROJECTIONS FOR THE RIFLE AND BLANCO DISTRICTS OF THE WHITE RIVER NATIONAL FOREST

Developed Use: Normal increase of recreation use on Blanco and Rifle Districts indicates a 20% increase for 1980 - 1985 and an 80% increase for 1980 - 2000 without any energy development population increase.

1980 use Recreation Visitor Days.

72,600 (use from Denver area)
42,108 (use from northwestern Colorado)
30,492 (use from outside the above two areas)
145,200 Total

Developed Use Projections:

Scenario II population projections

1980 - 1985

96,558 (Denver growth rate of 13% + 20% recreation rate increase).
81,690 (NW Colo. growth rate of 74% + 20% recreation rate increase).
36,590 (outside area 20% recreation rate increase).
214,838 RVD Total

1980 - 2000

163,350 (Denver growth rate of 45% + 80% recreation rate increase).
128,850 (NW Colo. growth rate of 126% + 80% recreation rate increase).
54,886 (outside area 80% recreation rate increase).
347,086 RVD Total

Scenario III population projection

1980 - 1985

96,558 (Denver growth rate of 13% + 20% recreation rate increase).
93,059 (NW Colo. growth rate of 101% + 20% recreation rate increase).
30,492 (outside area 20% recreation rate increase).
220,109 RVD Total

1980 - 2000 163,350 (Denver growth rate of 45% + 80% recreation rate increase).
158,326 (NW Colo. growth rate of 196% + 80% recreation rate increase).
54,886 (outside area 80% recreation rate increase)

376,562 RVD Total

Without energy development:

1980 - 1985 174,240 RVD (all areas 20% growth rate)

1980 - 2000 261,360 RVD (all areas 80% growth rate)

Dispersed Use:

1980 Use RVD's 150,000 (Use from Denver Area).
58,000 (Use from N.W. Colo.).
92,000 (Use from outside the above two areas).

300,000 RVD Total

Dispersed Use Projections

Scenario II

1980 - 1985 199,500 (Denver growth rate 13% + 20% recreation rate increase).
112,520 (NW Colo. growth rate 74% + 20% recreation rate increase).
110,400 (outside area 20% recreation rate increase).

422,420 RVD Total

1980 - 2000 337,500 (Denver growth rate 45% + 80% recreation rate increase).
177,480 (NW Colo. growth rate 126% + 80% recreation rate increase).
165,600 (outside area 80% recreation rate increase).

680,580 RVD Total

Scenario III population projections

1980 - 1985	96,558	(Denver growth rate of 13% + 20% recreation rate increase).
	128,180	(NW Colo. growth rate of 101% + 20% recreation rate increase).
	30,492	(outside area 20% recreation rate increase).
	255,230 RVD Total	
1980 - 2000	163,350	(Denver growth rate of 45% + 80% recreation rate increase).
	218,080	(NW Colo. growth rate of 196% + 80% recreation rate increase).
	54,886	(Outside area 80% recreation rate increase).
	436,316 RVD Total	

Without energy development

1980 - 1985	360,000 RVD	(all areas 20% growth rate)
1980 - 2000	540,000 RVD	(all areas 80% growth rate)

There are weaknesses in this approach - specifically: 1) current use figures are generally considered to be somewhat innaccurate or inconsistant between units (t ey are the best figures available, however); 2) Trappers Lake is a well known destination site - use for the dispersed areas on Blanco or Rifle Districts may not be at the same proportion of use for the two areas.

Consider the figures in Table 5 in this light. The figures give an indication of magnitude and trend. Considering all the other unknowns with oil shale and coal development, such as how much, when, and will there be reservoir development, these figures are subject to a great deal of change.

One change all land managers agreed on was that law enforcement efforts would have to be increased greatly. They also agreed that efforts to inform newcomers about what recreation opportunities are available, what other Forest Service resource management involves and what our regulations are, would have to be specifically planned and implemented. All indicated, with current staffing, this task would be very difficult to do adequately. All units are stretched already to do the management job at the current level. With increased use and activity, managers will have to look for more efficient means of doing the job, as well as look at additional staffing needs.

Summary

The energy development in northwestern Colorado promises to bring some major changes to the area. These changes will affect use of public lands. Forest

Service emphasis in recreation will require close cooperation with Bureau of Land Management, State and County agencies to be able to provide opportunities to meet the increasing recreation needs.

The White River National Forest should be emphasizing the following recreation needs in their land management planning efforts.

Developed camping needs

All opportunities to provide camping facilities should be considered. It should encourage other entities to also take advantage of any opportunities to provide camping facilities. Camping facilities should be water oriented if possible.

Fishing needs

Any action that would decrease fishing opportunities should be evaluated very carefully. The goal is to provide more fishing opportunities.

Hunting needs

Hunting will continue to be popular. Use will continue to grow. It is likely that if local hunting use increases, out of state use might decrease because out of state success might decrease.

Down hill skiing needs

Down hill skiing demand will increase because of energy population increases. The Forest Service should address this added impact in studies of ski areas currently scheduled.

Cross country skiing demand

The demand for marked trails will probably grow.

Snowmobiling demand

Marking and grooming of trails will probably be requested. The State, counties and Forest Service should cooperate in providing facilities and services.

Law enforcement needs

Needs grow as more people unfamiliar with the area and the regulations use the areas. Conflicts with new comer and old timers could increase. Public information and involvement in management decisions will be essential. The "Host" attitude will be essential for all employees.

Recreation research needs

The information evaluated in this report is activity oriented rather than experience oriented. There may be potential to substitute one activity for another and still provide the user with a satisfying recreation experience. As dollars and staffing become more restricted and land capacity to provide certain activities becomes limited, land managers are going to have to look for alternatives that are cost efficient and satisfy a number of users. Research can help identify the user needs that are being satisfied in various activities, as well as specifically what a particular type of user wants in a recreation activity.

The information in this report will be used as data background for the Forest Management Plan. It will also be used on the District for program planning and analysis of District organization.

Ways of "doing business" will have to be looked at continually to see if more efficient ways can be developed. Staffing needs, dollars and priorities will also have to be looked at so the agency will be able to provide the public with the products, facilities and services needed to help this region cope with social changes.

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Various RIM (Forest Service - Recreation Information Management) documents were used in this report.

METHODOLOGY

REGION XI POPULATION PROJECTIONS

The population projections contained within this report were conducted by the Colorado West Area Council of Governments in July, 1980. The population projections were derived from a computer model which incorporated the following factors into its calculations:

- 1980 population estimates which are based upon preliminary U.S. Census housing counts with assumed vacancy rates of 3 to 4 percent and associated family multipliers for incorporated communities and counties.
- baseline (scenario I) population projections which reflect a revision of earlier baseline projections which were based upon 1960-1977 U.S. Census data. The revised baseline utilizes actual vital rates (births and deaths) and historical migration rates to obtain the baseline natural growth (without energy development) for the 1980-2000 period.
- energy company base worker employment projections with accompanying family multiplier of (2.71).
- base worker distributions assigned by community and county.
- non-base support worker multipliers (which range from .1 to 2.0) with accompanying family multipliers (3.04).
- cohert survival factors. *

The population data within this report includes: 1977 special census, 1980 population estimates, preliminary U.S. Census housing counts, and population projections for each impacted county, community and balance of county (B.O.C.) within Region XI for the years 1980-1985, 1990, and the year 2000. There are three seperate population growth scenarios.

The population projection scenarios are as follows:

Scenario 1 - Normal population growth without energy development or other

* Seperate projections are available for elderly and school age children.

major short term growth factors.

Scenario II - Energy development projected with coal and oil shale development as is currently planned (see below for list of companies).

Scenario III - Energy development projected with energy development at a high level of production of shale oil, 450,000 barrels a day by 1990 and 640,000 barrels a day by the year 2000; and a coal production level of 26 million tons per year by 1985 and 34 million tons per year by the year 2000.

Scenario III is based upon the President's proposed program for synthetic fuel development with production levels for shale oil as noted above. The Scenario III population figures have been accepted by the U.S. Environmental Protection Agency and provide the basis for the revised and officially approved 208 EPA/BEA population projections for the State of Colorado.

It should be noted, however, that Scenario II has been selected by the Colorado West Area Council of Governments Board as the Region's officially endorsed population projections. Scenarios I and III are provided in order to provide a reference point and a range of population growth. Scenario II is selected because it reflects the stated plans of the various energy companies which, either are actively involved in development operations, or are actively pursuing development plans in Region XI.

Both Scenarios II and III of this report reflect the total population actually needed (both basic and non-basic support) to adequately accommodate anticipated energy development and secondary services. Therefore, Scenarios II and III in essence reflect what the population should be for the area to properly function and not necessarily what might actually occur. Actual population levels could vary greatly depending upon a multitude of variables, the main variable being the energy companies actual work force scheduling, and in particular, the level of effort, program development, and commitment of

resources to adequately support the level of growth required to meet energy company production schedules. Unless major accommodation efforts are continued and expanded, serious problems can be anticipated from 1981 through 1984 for the Region as a whole and particularly in the Rifle/Meeker growth impacted area.

The energy company work force projections which were utilized in the preparation of Scenario II population projections include companies with expansion and/or development plans and are as follows:

C-a Rio Blanco Oil Shale Project (Gulf and Standard)
C-b Cathedral Bluffs Shale Oil Company (Occidental and Tenneco)
Colony Oil Shale Project (Arco/Exxon and TOSCO)
Union Oil Shale Project
Superior Oil Shale and Minerals Project
Snow Mass/Anshutz Coal
Colowyo Coal
Northern Minerals Coal
New Coal (Leasing and Expansions as proposed as part of BLM's Hams-Fork Green River E.I.S.)
Ancillary Basic Response Development in Mesa County
Colorado Ute Power Plant
Utah International
GEX/CMC Coal
Sheridan Coal
Energy Fuels
Mid-Continent Mesa II
Moon Lake (Power Plant and Coal)
Storm King

The population projections contained within this report are an update of previously prepared growth monitoring efforts conducted by the Colorado West Area Council of Governments. Region XI of Colorado contains the counties of Rio Blanco, Garfield, Mesa, and Moffat. According to the 1977 Special Census, the Region's population was 101,051. Based upon "preliminary" 1980 U.S. Census housing data, there are 48,365 housing units in Region XI. At a three percent vacancy rate and by applying the 2.55 family multiplier (46,914 occupied units x 2.55), an unofficial CWACOG population estimate for Region XI produces a figure of 119,865 people in January 1980. This figure compared to the 101,051 1977

Special Census figure is illustrative of the type of growth the Region has been experiencing in only the beginning phases of oil shale development. With major oil shale development activities, the Region's population is anticipated to nearly double by 1985. Most of the growth will occur in the Grand Junction area of Mesa County. However, it is also anticipated that Garfield County, and in particular the City of Rifle, will experience the most dramatic growth by 1985. The already heavily growth impacted Moffat County/Craig area will continue to experience growth pressures, while Rio Blanco County, currently the smallest in population, could more than quadruple in population by 1985.

These projections clearly point to the need for extensive preparation in order to deal with the tremendous growth pressures generated by large scale energy developments. Each county within Region XI in conjunction with the Colorado West Area Council of Governments has initiated a comprehensive impact mitigation process. The impact mitigation process includes county and municipal comprehensive planning, capital improvements programming, and an impact committee structure comprised of county impact advisory groups and county core groups which assess community and county needs and resource requirements. The purpose of this report is to provide the best information available in facilitating the impact mitigation process within Region XI.

SPECIAL NOTE:

If you should have any questions concerning these population projections, please feel free to contact the Colorado West Area Council of Governments, Box 351, Rifle, CO 81650, (303/625-1723). Additional information can be made available on an individual basis, including such information as 1977 Census data, economic data, current population projections for elderly and school aged children, CWACOG Growth Monitoring Reports of previous years, and background information utilized in the compilation of this report.